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DETAILED PROJECT REPORT AND ENVIRONMENTAL ASSESSMENT

SECTION 14 EMERGENCY STREAMBANK PROTECTION

SOAP CREEK

COUNTY BRIDGE SITE NO. 3

DAVIS COUNTY, IOWA

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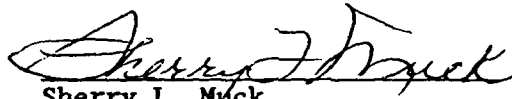
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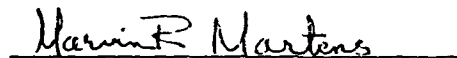
ACKNOWLEDGMENT

Many members of the Rock Island District assisted in the preparation of this report. Primary study team personnel who are familiar with the technical aspects of the study are listed below:

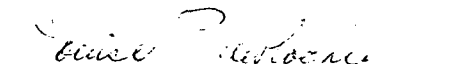
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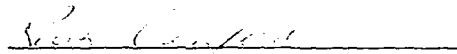

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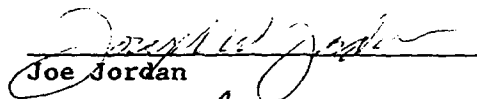

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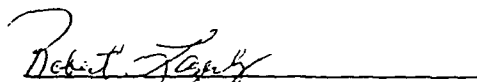
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**US Army Corps
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Rock Island District

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OUR WORK**

SYLLABUS

This report addresses the problem of streambank erosion on Soap Creek at County Bridge Site No. 3 in sec. 21, T. 70 N., R. 15 W., Marion Township, Davis County, Iowa. The study area, which is located on both abutments of the bridge, involves approximately 200 linear feet of bankline.

Under the authority of Section 14 of the 1946 Flood Control Act, as amended, Rock Island District representatives made a site visit to Davis County, Iowa, in March 1990 to investigate the severity of the erosion at several bridges in the county.

This Detailed Project Report recommends that riprap be placed around the abutments and wingwalls of County Bridge No. 3. This protection should extend beyond the abutments in both directions. Additional toe protection and end protection will be used on both sides of the creek banklines. Approximately 1,800 tons of riprap will be placed to the top of the bank to provide a minimum 1:V on 2:H slope. The total estimated cost for the project is \$50,000, with a benefit-to-cost ratio of 3.3. The project satisfies the criteria for Federal participation and is recommended for construction.

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AND ENVIRONMENTAL ASSESSMENT
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SECTION 14 EMERGENCY STREAMBANK PROTECTION

SOAP CREEK
COUNTY BRIDGE SITE NO. 3
DAVIS COUNTY, IOWA

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DAVIS COUNTY, IOWA

SECTION 1 - INTRODUCTION

STUDY REQUEST

In a letter dated January 18, 1990, the Davis County, Iowa, Board of Supervisors, represented by the County Engineer, requested assistance from the Rock Island District under the authority provided by Section 14 of the 1946 Flood Control Act, as amended. The request was in regard to erosion along the north and south bridge abutments at County Bridge Site No. 3 in Marion Township at Soap Creek. This bridge is an important farm market route used by local farmers in the northwestern portion of the county.

Rock Island District representatives visited the site to determine the severity of erosion and what could be done to control the erosion which is threatening the integrity of the bridge.

The Rock Island District informed the Davis County Engineer on February 26, 1990, that a study was being initiated to determine the economic feasibility of providing erosion protection for the county bridge located across Soap Creek, in sec. 21, T. 70 N., R. 15 W., Marion Township, Davis County, Iowa.

STUDY AUTHORITY

The authority for this study and report is Section 14 of the 1946 Flood Control Act, as amended by the Water Resources Development Act of 1986. The authority, as amended, states:

That the Secretary of the Army is authorized to allot from any appropriations heretofore and hereinafter made for flood control, not to exceed \$12,500,000 per year, for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damages to highways, bridge approaches, public works, churches, hospitals, schools, and other nonprofit public services, when in the opinion of the Chief of Engineers such work is advisable: Provided, that no more than \$500,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year.

STUDY SCOPE

STUDY AREA

The study area, as shown on plate 1, is located on Soap Creek, sec. 21, T. 70 N., R. 15 W., Marion Township, approximately 11 miles northwest of Bloomfield, Iowa. Soap Creek is a highly meandering stream, with a drainage area of approximately 97.3 square miles at the bridge site. The area is agricultural and timber, with soils that are a sandy, silty type and very susceptible to scouring at the toe of the bank, causing upper bank failure. Flood conditions, such as the county has experienced during summer 1990, are contributing to the erosion around and under the bridge abutments at the Soap Creek bridge.

DETAIL OF INVESTIGATION

This emergency Detailed Project Report (DPR) and Environmental Assessment is intended to serve as the decision document, with sufficient detail to allow approval of the project and initiation of the preparation of plans and specifications.

RELATED STUDIES, REPORTS, AND EXISTING WATER PROJECTS

Studies presently are being funded by the Corps of Engineers to assess the economic feasibility of protecting bridge abutments located at three other areas in Davis County.

SECTION 2 - PLAN FORMULATION

PUBLIC CONCERNS

The Davis County Engineer has been concerned about continued erosion at County Bridge Site No. 3 abutments on Soap Creek. The county has made yearly efforts to protect all of the county bridges with riprap or broken concrete. They have modified some bridges by extending the spans on either end or have replaced several bridges. Erosion and bank instability have been recurrent problems, but funds are not readily available for providing lasting protection at every site.

EXISTING CONDITIONS

A 2-inch rainfall in the Soap Creek drainage area causes extremely high velocity flows which do not subside for approximately 2 to 3 days. The creek is very flashy and destructive. The bridge piers are checked annually for accumulated debris, and the county cleans the large debris from the channel to prevent damages to the bridge piers and abutments. The county also provides some degree of protection at each abutment, but it is very difficult to keep up with damages because of the number of bridges for which the county is responsible. The county has replaced two major bridges within the past 2 years.

FUTURE CONDITIONS WITHOUT PROJECT

The erosion rate (5 feet per year since 1982) was determined by analyzing aerial photos received from the county engineer and recent survey data obtained by the Corps of Engineers. If no action is taken, the integrity of the County Bridge Site No. 3 will be threatened. If rainfall continues to occur at the rate that it has this year, there is a strong possibility that the bridge abutments will be undercut and cause the bridge to fail beyond repair.

PLANNING OBJECTIVES

NATIONAL OBJECTIVES

The plan formulation process to accomplish flood damage reduction is formulated and directed by a national planning objective consistent with protecting the Nation's environment pursuant to national environmental

statutes, applicable Executive Orders, and other Federal planning requirements.

Water and land-related resources project plans are formulated to alleviate problems and to take advantage of opportunities in ways that contribute to that objective.

Contributions to the National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct benefits that accrue in the planning area and the rest of the nation, and include increases in the net value of those goods and services that are marketed, and those that may not be marketed.

SPECIFIC OBJECTIVES

Specific objectives include preventing economic losses due to failure of the Davis County Bridge Site No. 3 and minimizing adverse impacts of flood damage reduction measures on the resources.

PLANNING CONSTRAINTS

This study is constrained by all laws of the United States and the State of Iowa, all Executive Orders of the President, and all engineering regulations of the Corps of Engineers. This study also is constrained by the study authority as stated in Section 1 of this report.

ALTERNATIVE SOLUTIONS

Three alternatives were considered in detail to curtail the erosion in the study area: (1) strategic placement of jetties or hard points; (2) concrete-filled mattress protection; (3) and riprapping around the bridge abutments.

SELECTED PLAN

Analysis revealed that the riprap alternative along the bank and around the abutments of the bridge would be least costly, maximizes net benefits, and has sponsor approval. This alternative would effectively control the severe erosion and scouring which is threatening the integrity of the county bridge crossing Soap Creek.

The proposed work consists of clearing the bankline and placing riprap along both bridge abutments and wingwalls. The riprap would extend on either side of the abutments, and upper end protection would be provided to prevent undercutting of the project. The riprap would extend beyond the toe of the bank for additional bank protection (see plate 2).

Approximately 1,800 tons of riprap would be placed at the project site. The total estimated amount of material to be placed beneath the calculated Ordinary High Water (OHW) elevation of 723.0 feet National Geodetic Vertical Datum (NGVD) is 0.74 cubic yard per linear foot of river bank.

The local sponsor, the Davis County Board of Supervisors, will be responsible for cost-sharing construction of the project and 100 percent of the operation and maintenance of the completed project, as required by the Water Resources Act of 1986, Public Law 99-662.

HYDRAULIC ANALYSIS AND BANK PROTECTION DESIGN

Flow Analysis

Flow-frequency relationships were developed for Soap Creek at a road crossing in sec. 21, T. 70 N., R. 15 W., Davis County. Plate 1 shows the location of the study site. The drainage area at this site is about 97.3 square miles. A discharge-frequency relationship at this site was computed using the Iowa regression equations published in the U.S. Geological Survey Water Resources Investigation Report 87-4132 entitled, *Method for Estimating the Magnitude and Frequency of Floods at Ungaged Sites on Unregulated Rural Streams in Iowa*. The discharge-frequency curve is shown on plate 4.

The 100-year flood (the flood with a 1 percent chance of occurring in any year) is 13,918 cubic feet per second (cfs). However, the bank-full discharge of 3,500 cfs was selected as the design flow. The boundary shear was computed using the following equation.

$$T_o = \frac{GV^2}{(32.6 \log_{10} \frac{12.2y}{D50})^2}$$

G = Unit weight of water
 (62.4 pcf)
 V = Velocity = 3.4 fps
 D50 = Stone diameter .58
 y = Flow depth = 13 ft.

The problem area is located in a relatively straight reach of stream; therefore, a bend coefficient was not calculated. Using a nonuniform flow factor of 1.5, the local boundary shear used for the design would be $(1.5)(0.114) = 0.17$ psf.

Bank Protection Evaluation

The riprap design shear for a 12-inch layer at a slope of 1:V on 2:H and a D50 of 0.58 foot was calculated to be 1.71 psf using the following equations:

$$T_o = T \left(1 - \frac{\sin^2 c}{\sin^2 d} \right)^{.5}$$

Ts - Side slope design shear
c - Side slope angle (26.6)
d - Angle of repose (40)
T - Channel bottom design shear

$$T = a (G_s - G) D_{50}$$

a = 0.040
D50 = 0.58 ft.
G_s = Unit stone weight
(165 pcf)

From the preceding shear analysis, a 12-inch riprap layer should provide more than adequate protection from future bank erosion. The required riprap design gradation was determined in accordance with procedures in EM 1110-1601 and ETL 1110-2-120. The following is the required minimum riprap gradation:

<u>Percent Lighter by Weight</u>	<u>Limits of Stone wt., lbs.</u>
100	86-35
50	26-17
15	13-05

Any riprap placed under water should be 18 inches thick. The riprap blanket should extend beyond the toe of the bank, and the ends of the blanket should extend beyond the limits of existing erosion. A bedding layer 6 inches thick should be provided under the riprap. Experience at other projects has indicated that Iowa Class D riprap at a thickness of 18 inches also would provide adequate protection at this site. If Class D riprap is selected, it should be a material meeting the following size limitations:

<u>Minimum % Larger Than</u>	<u>Stone wt., lbs.</u>
0	250
50	90
90	5

No more than 5 percent shall pass the 1/2-inch sieve.

A riprap design also was completed using the methodology presented in the March 1990 working draft of EM 1110-2-1601 and the Waterways Experiment Station publication TR HL-88-4. The basic equation for the representative

required stone size, D30 (the riprap size of which 30 percent is finer by weight), in a straight or curved channel is as shown below.

$$D30 = 1.2(.3)y \left[\left(\frac{G_s}{G_s - G} \right)^{.5} \left(\frac{v^2_T}{T_s A y} \right)^{.5} \right]^{2.5}$$

Where A = the acceleration of gravity and other terms are as previously defined.

This method results in a D30 of 0.13 foot which is consistent with the older method presented previously, and indicates that a layer thickness of 12 inches is more than adequate.

As a means of comparison, jetties or hard points were considered as an alternative protection method. Since the purpose of this project is to protect the bridge abutments in conjunction with a relatively short length of the streambank requiring protection, riprap placement is the recommended alternative.

The concrete-filled mattress design was based on general specifications and recommendations by the manufacturer. The resulting protection should be a 4-inch-thick articulating type mattress placed on a filter fabric blanket on a 1:V on 2:H slope and should cover the entire slope of the existing bank according to the manufacturer's specifications. This design is adequate to stabilize the banks for flow velocities up to approximately 10 feet per second and design wave heights up to 1.3 feet.

Ordinary High Water (OHW) Elevation

The OHW elevation corresponds to the 25 percent duration flow. The 25 percent duration flow was determined to be 40 cfs. This value was obtained from a synthetic relationship developed for the State of Iowa by the Corps of Engineers based on 113 gaging stations. It is estimated that this flow would result in a depth of about 1.5 feet or a water surface elevation of about 723.0 feet NGVD at this site.

ENVIRONMENTAL ASSESSMENT

Purpose and Alternatives

The purpose of this Environmental Assessment (EA) is to evaluate the impacts of various measures proposed to prevent the failure, due to erosion, of County Bridge Site No. 3 over Soap Creek. The alternatives considered included reshaping and riprapping of the creek bank or placing a concrete mattress with extra riprap toe protection. The selected plan,

bank reshaping and riprapping, is described in detail in Section 2 of this report.

An environmental review of the selected alternative indicates that there would be no significant effects on the environment, with any effects being short-term and minor. Thus, an Environmental Impact Statement (EIS) will not be prepared. Because the proposed action meets the criteria for a Nationwide Permit at 33 CFR 330.5 (a)(13), Clean Water Act, a Section 404 Water Quality Certification will not be required.

Relationship to Environmental Requirement

The proposed action would comply with Federal environmental laws, executive orders and policies, and State and local laws and policies including the Clean Air Act, as amended; the Clean Water Act, as amended; the Endangered Species Act of 1973, as amended; the Fish and Wildlife Coordination Act of 1958, as amended; the Land and Water Conservation Fund Act of 1966, as amended; the National Historic Preservation Act of 1966, as amended; Executive Order 11988, Floodplain Management; and Executive Order 11990, Protection of Wetlands.

The proposed action would not result in the conversion of farmland to nonagricultural uses; therefore, the Farmland Protection Policy Act of 1981 does not apply to this project. Because Soap Creek is not a federally recognized wild or scenic river, the project would not conflict with the provisions of the Wild and Scenic Rivers Act of 1968.

Environmental Setting

Soap Creek, a tributary of the Des Moines River System, flows in a generally southeasterly direction through the south-central portion of Iowa. The project is located on both banks of the creek, and the surrounding landscape is primarily agricultural fields with some wooded edges.

Natural Resources

The project site is located on both sides of the creek channel. Substrate at this point is primarily sand and silt. A detailed description of existing conditions at the project site was given earlier in this section.

Vegetation along the streambank consists of a mixture of grasses and forbs with a few woody shrubs on the lower portion of the slope. This habitat would provide limited food and cover for wildlife species which utilize riparian and open-field edge areas.

One federally recognized endangered species, the Indiana bat (*Myotis sodalis*), is listed for this area. Suitable habitat for the Indiana bat (loose bark on trees) is not found at the project site. For this reason, no impacts to this species are expected to result from the proposed action.

Environmental Effects

No significant adverse impacts would result from construction of the proposed project. Temporary disturbances to local wildlife may occur during the construction phase. However, the existing conditions along the project reach are of little value to wildlife that may be present.

Some minor loss of benthic organisms may result from construction of the proposed project. However, after placement of riprap is completed, the affected area should quickly recolonize. Any impacts to the river system during the construction phase of the project would be minor and offset by the ultimate preservation of the creek bank. The proposed project would reduce erosion of the creek bank and siltation of the channel, alleviating the possibility of the bridge collapsing.

Temporary increases in turbidity may occur during project construction, but levels of turbidity would return to pre-construction levels or lower since sediments would no longer be eroding into the river system. In addition, noise levels would increase and air quality would decrease during the construction phase. However, these are minor impacts and would not permanently affect the area.

Cultural Resources

Inspection of the banklines, 200 feet upstream and downstream from the bridge, revealed no cultural resource sites. One shovel cut was necessary on the bank northwest of the bridge. This cut reached from the top of the bank to approximately 70 cm and revealed a uniform, overbank deposit of apparent recent origin.

Pedestrian survey was conducted in two field areas near the bridge. The area on the north bank northwest of the bridge measured 30 feet by 275 feet, was plowed, well rainwashed, and had a ground visibility of 100 percent. The area east of the bridge measured 30 feet by 200 feet and had the same ground conditions as the former area, with the exception of a small area of soybean stubble at its northern end where ground visibility was 50 percent. No cultural resource sites were found. The pedestrian survey covered approximately 0.40 acre at this location.

The south bank was more heavily disturbed than the north bank because of riprap and fill associated with earlier construction.

In a letter dated April 2, 1990, the Iowa State Historic Preservation Officer found that the project would affect no historic properties.

Social and Economic Effects of the Proposed Plan

The socioeconomic impacts associated with providing streambank erosion protection for the affected Davis County, Iowa, bridge would be positive. The project would provide for continued use of the bridge and affected roadway, which serves as the primary access between Lake Wapello State Park and Stephens Forest. The project would help maintain community cohesion, by sustaining an important access route between these recreation areas. In addition, the project would require no residential relocations and would result in no impacts to community or regional growth.

Public facilities and services would benefit from reduced damages from flood-related erosion. The affected Davis County bridge would not fail, and relocation or early replacement of the facility would be avoided. The project also would maintain access between two important public recreation areas. In addition, the project would eliminate potential life, health, and safety threats associated with erosion-induced failure of the roadway.

The project would help to maintain current property values and related tax revenues for the properties serviced by the roadway. Project construction would not noticeably impact employment or the Davis County labor force. No changes in business or industrial activity would be noticed during or after project construction, and no business or farm relocations would be required.

Heavy machinery would generate temporary increases in noise levels during construction. Noise disturbances to residents, businesses, or recreationists would be minimal, but increased noise levels would temporarily impact wildlife in the vicinity. The aesthetics of the affected riverfront property would not be adversely impacted, as the current shoreline is badly eroded and features little vegetative cover.

REAL ESTATE REQUIREMENTS

Davis County owns right-of-way at the study site to maintain the facility and to clear debris from the creek; therefore, no credit can be given to the sponsor for lands already in their possession. The area required for permanent right-of-way is less than .5 acre and will be addressed in the plans and specifications portion of this study.

ECONOMIC EVALUATION

Methodology

This study assesses the feasibility of providing protective action necessary to curtail bank erosion along Soap Creek in Davis County, Iowa. The erosion is threatening the abutments of County Bridge Site No. 3 which is located approximately 11 miles northwest of Bloomfield in central Davis County. The bank has eroded to the bridge abutments, and failure is imminent. Without protective action, high water in the spring of 1991 is expected to cause failure of the bridge.

The annual benefits and costs of the action were computed using November 1990 price levels and an 8-7/8 percent discount rate. The period of analysis is 38 years (remaining life of bridge) and assumes that the historic rate of erosion has been approximately 5 feet per year since 1982. The historic erosion rate was determined by comparing recent Corps of Engineers survey data to historical data furnished by the Davis County Engineer.

Benefits of Protective Action

The benefits of protective action are derived from a consideration of what would occur if no action were taken. Four potential categories of benefits were examined: (1) detour; (2) maintenance costs; (3) land loss; and (4) redevelopment.

(1) Detour Costs. Without protective action, the erosion on the bridge abutments due to flash flooding during the rainy season could cause failure of the bridge during the project base year (1991), closing it to traffic. Motorists would be forced to use a longer, alternate route until the county could repair the erosion damage and reopen the bridge in year 3. Motorists using the detour route in years 1 and 2 would incur additional expenses related to costs for operating vehicles and opportunity of time costs. Benefits derived from avoided detour costs were computed based on the following:

(a) In 1990, the average daily traffic count on the bridge was 75 vehicles, as reported by the Davis County Engineer. This average daily traffic is broken down in table 1 by vehicle type, detour days per year, and average number of trips per detour day.

TABLE 1

Analysis of 1990 Average Annual Traffic

<u>Vehicle Type</u>	<u>Detour Days Per Year</u>	<u>Average Daily Number of Trips</u>	<u>Total Annual Number of Trips</u>
Passenger Cars	365	67	24,455
Heavy Trucks	309	3	927
School Buses	180	6	1,080
Mail Vehicles	302	1	302
Farm Machinery	123	2	246
Emergency Vehicles	365	1	<u>365</u>

Total Annual Number of Trips for All Vehicles = 27,375

27,375 = 75 vehicles/day
365 Days

(b) The most direct detour route would necessitate that an additional 10 miles be driven, or 20 miles round trip. Other combinations of detour routes would further increase detour mileage. At an average speed of 40 mph, the detour route would require an additional 0.25 hour for travel each way.

(c) Mail vehicles, farm machinery, and heavy trucks would have no passengers other than the driver. Passenger cars would have an average of 2 persons; emergency vehicles would have 2 occupants. School buses would have a driver and an average busload of 16 passengers.

(d) The 1990 average variable cost for operating passenger cars and mail vehicles is approximately \$0.27/mile; buses, emergency vehicles, and heavy trucks \$0.57/mile; and farm machinery \$0.98/mile. These figures are based on average maintenance, repair, accessory, tire, fuel, and oil costs, including taxes on gasoline, oil, and tires.

(e) The opportunity cost of time is the value of work or leisure activities foregone for travel purposes. For passenger cars, the value of time for adults and children was assumed to equal 1/3 and 1/12 of the average hourly general wage rate, respectively. The Bloomfield, Iowa, area 1990 average hourly wage rate is approximately \$7.30, with 39 percent of the area residents being under the age of 18. Therefore, the opportunity cost of time for passenger cars was assumed to be \$1.72 per hour per occupant.

$$(\$7.30 \times 0.61 \times 1/3 + \$7.30 \times 0.39 \times 1/12 = \$1.72)$$

(f) Approximate hourly wage rates were used as values of time for school bus drivers (\$5.32), mail carriers (\$12.00), emergency vehicle drivers (\$8.34), farm machinery operators (\$5.70), and heavy truck

operators (\$6.50). School buses require an opportunity cost of time amounting to \$15.05 per hour for 1 driver and 16 children.

$$(\$5.32 + \$7.30 \times 1/12 \times 16 - \$15.05)$$

(g) As shown in tables 2 and 3, detour costs resulting from increased vehicle operating costs and opportunity of time costs amount to \$82,800 and \$18,100, respectively. The total benefit of avoiding these detour costs in years 1 and 2 is \$16,500, as shown in table 4.

TABLE 2

Summary of Vehicle Operating Costs
Resulting from a 1-Year Road Detour

<u>Vehicle Type</u>	<u>Extra Mileage Per Day¹ (A)</u>	<u>Total Annual Number of Trips (B)</u>	<u>Operating Cost Per Mile (\$) (C)</u>	<u>Total Operating Cost Per Year (\$) (A x B x C)</u>
Passenger Cars	10	24,455	0.27	66,029
Heavy Trucks	10	927	0.57	5,284
School Buses	10	1,080	0.57	6,156
Mail Vehicles	10	302	0.27	815
Farm Machinery	10	246	0.98	2,411
Emergency Vehicles	10	365	0.57	<u>2,081</u>
Total Cost (\$):				82,776
(rounded)				82,800

¹ One-way detour mileage is 10 miles.

TABLE 3

Summary of Opportunity of Time Costs
Resulting From a 1-Year Road Detour

<u>Vehicle Type</u>	<u>Traveler Time Per Trip in Hours (A)</u>	<u>Total Annual Number of Trips (B)</u>	<u>Opportunity Time Cost Per Hour (\$) (C)</u>	<u>Total Opportunity Time Cost Per Year(\$) (A x B x C)</u>
Passenger Cars	0.25	24,455	1.72	10,516
Heavy Trucks	0.25	927	6.50	1,506
School Buses	0.25	1,080	15.05	4,064
Mail Vehicles	0.25	302	12.00	906
Farm Machinery	0.25	246	5.70	351
Emergency Vehicles	0.25	365	8.34	<u>761</u>
Total Cost (\$):				18,104
(rounded)				18,100

TABLE 4

Annual Detour Costs
 (8-7/8 Discount Rate, 38-Year Period of Analysis,
 November 1990 Price Levels)

<u>Year</u>	<u>Total Detour Cost (\$)</u>	<u>Present Worth of \$1 Per Period</u>	<u>Present Value of Detour Costs (\$)</u>
1	100,900	0.91847	92,700
2	100,900	0.84361	<u>82,100</u>
Total Value of Discounted Detour Costs (\$):			174,800
Annualized Detour Costs (\$) (CRF = 0.094240):			16,500

(2) **Road Maintenance.** Closure of the county bridge would result in no change in road maintenance costs. The annual maintenance cost for the detour route would increase by a dollar amount equal to the decrease in maintenance costs for the closed roadway, as explained by the Davis County Engineer.

(3) **Land Loss.** Benefits derived from avoided land loss are not applicable in this instance.

(4) **Redevelopment Benefits.** Davis County, Iowa, does not qualify for redevelopment benefits.

(5) **Total Benefit.** The total benefits from providing streambank erosion protection are \$16,500.

Cost of Recommended Action

The Rock Island District identified the least-cost alternative for protecting the county bridge from failure caused by erosion around the bridge abutment. The study recommends placing riprap along 200 linear feet of the bankline. The bank also would be covered with a minimum of 18 inches of riprap to protect the abutments and wingwalls of the bridge. This action is required to prevent further erosion and to guard against undercutting. The preventive action has an estimated total first cost of \$50,000.

Detailed project first costs and average annual costs, computed at an 8-7/8 percent discount rate over a 38-year period of analysis, are shown in table 5. Annual operation and maintenance costs were calculated based on the proportion of riprap that would be replaced annually. As a result of the short construction period, no interest during construction was calculated. A summary of benefits and costs for the recommended action is shown in table 6. As indicated, an erosion protection project along the streambank of Soap Creek in Davis County, Iowa, is economically feasible and represents the National Economic Development plan.

TABLE 5

Detailed Estimate of Construction Costs (December 1990 Price Levels)

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total Unit Cost (\$)</u>
Riprap	1,820	ton	17.50	31,050
Bank Preparation	.5	acre	2,000	1,000
Clear and Haul Spoil	100	CY	15.00	<u>1,500</u>
			Subtotal	33,550
			Contingencies	<u>8,450</u>
			Subtotal	42,000
			Engineering and Design	5,000
			Supervision and Administration	<u>3,000</u>
			Total Project Cost:	\$50,000

TABLE 6

Summary of Benefits and Costs
(8-7/8 Percent Discount Rate, 38-Year Period of Analysis)
(November 1990 Price Levels)

<u>Description</u>	<u>Amount</u>
Project First Cost	\$50,000
Annualized First Cost	\$ 4,600
Annual Maintenance Cost	<u>300</u>
Total Annual Cost	\$ 4,900
Average Annual Benefits	\$16,500
Net Benefits	\$11,600
Benefit-to-Cost Ratio	3.3

Sensitivity Analysis

Benefits accruing from a flash flood erosion protection project would be sensitive to the year in which the bridge would fail. City records indicate that the historic rate of erosion has been approximately 5 feet per year since 1982, and failure of the bridge would occur during the project base year (1991). Sensitivity analysis indicates that the project would be economically feasible even if the bridge did not fail until year 10 of the 38-year analysis. This analysis assumes that the county would secure funds to perform repairs necessary to reopen in year 3. However, the county engineer indicated that funds for the bridge replacement (without project conditions) are currently unavailable. If no erosion protection were provided and the county were unable to obtain funds for the bridge replacement, the bridge detour would extend beyond year 2, and project benefits would increase. No adjustment has been made to account for increased vehicle operating expenses resulting from higher fuel costs since August 1990.

COST APPORTIONMENT

Project cost-sharing is in accordance with the Water Resources Development Act of 1986 (Public Law 99-662) and applicable regulations. Total cost apportionment for this project is shown in table 7.

TABLE 7

Cost Apportionment
Estimated Total Project Cost = \$50,000

Non-Federal

Estimated Total Project Cost	\$50,000
25 percent cost-share	<u>x 0.25</u>
Total Non-Federal Cash Contribution	\$12,500

Federal

Estimated Total Project Cost	\$50,000
Less Non-Federal Share	<u>-12,500</u>
Total Federal Cost	\$37,500

ABILITY TO PAY ANALYSIS

Section 103 of Public Law 99-662 requires the Corps of Engineers to evaluate a local sponsor's ability to pay the required non-Federal costs of a project. The county does not qualify for a reduced cost-sharing formula. The analysis is based on the project benefit-to-cost ratio and the project area per capita income, as shown in table 8.

TABLE 8

Ability to Pay Analysis

Annual Cost	\$ 4,900	Costs and benefits
Annual Benefits	16,500	for flood control
Total Cost	50,000	
Local Share	12,500	
Benefit-to-Cost Ratio	3.3	Sum of State and
State Factor	91.39	County must be
County Factor	73.64	less than 163.2.
Sum is 165.03		

Not Qualified

Base Benefits Floor	83%	1/4 Benefit-to-
% Local Share	25%	Cost Ratio
EF	-0.16	Eligibility Factor

FINANCIAL ANALYSIS

Davis County, Iowa, the local sponsor, is willing and able to pay its share of the project cost. Funding for the county's share would be obtained from their county roads fund and is available or can be readily obtained when needed.

SECTION 3 - PLAN IMPLEMENTATION

CORPS OF ENGINEERS

This report will be processed for approval of the selected plan of action and the authorization of funding for construction. Upon approval and appropriation of funding by the Office of the Chief of Engineers, the Rock Island District will be responsible for the preparation of plans and specifications and the construction of the project.

COORDINATION

Details of the proposed project have been coordinated with the following Federal, State, and local agencies:

- Davis County, Iowa
- Iowa Department of Natural Resources
- Iowa State Historical Department, Office of Historic Preservation
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency

Records of correspondence with members of these agencies can be found in Appendix A - Pertinent Correspondence.

DAVIS COUNTY

In compliance with Section 221 of Public Law 91-611, the county will, prior to the advertisement of any construction contract for the project, enter into a Local Cooperation Agreement with the Government, whereby the county pledges to act as local sponsor for the proposed project and carry out the following responsibilities:

- a. Provide during the period of construction a cash contribution of 5 percent of total project costs.

b. Provide all lands, easements, and rights-of-way, and dredged material disposal areas, and perform all relocations of utilities and facilities (excluding railroad bridges and approaches thereto) determined by the Government to be necessary for construction of the project.

c. If the value of the contributions provided under paragraphs a. and b. above represents less than 25 percent of total project costs, the county shall provide, during the period of construction, an additional cash contribution in the amount necessary to make its total contribution equal to 25 percent of total project costs.

d. Hold and save the Government free from all damages arising from the construction, operation, and maintenance of the project, except for damages due to the fault or negligence of the Government or its contractors.

e. Operate, maintain, repair, replace, and rehabilitate the completed project, or functional portion of the project, in accordance with regulations or directions prescribed by the Government.

f. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Public Law 100-17, and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

g. Comply with all applicable Federal and State laws and regulations, including Section 601 of Title VI of the Civil Rights Act of 1964, Public Law 88-352, and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

h. Contribute all project costs in excess of the Federal statutory limitation of \$500,000.

In addition, the county must grant the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to the project for the purpose of inspection and for the purpose of completing, operating, maintaining, repairing, replacing, or rehabilitating the project if such inspection shows that the county for any reason is failing to fulfill its obligations under the Agreement and has persisted in such failure after a reasonable notice in writing by the Government, delivered to the county. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Government in such event shall operate to relieve the county of responsibility to meet its obligations as set forth in the Agreement or to preclude the Government from pursuing any other remedy at law or equity.

The county has stated in a letter of assurance, dated September 20, 1990, that they have reviewed the form Local Cost Sharing Agreement and are willing and able to pay their share of the total project costs. Sufficient funds are available through the county's road use budget, and the cash payment can be deposited directly with the Government or in an escrow account, upon demand by the Government.

The estimated total non-Federal share of the total project costs is \$12,500. It is anticipated that the county will need to invest \$300 annually to replace lost riprap during the 38-year project life.

SECTION 4 - RECOMMENDATION

I recommend that the plan selected herein, to provide riprap slope protection around the abutments of Davis County Bridge Site No. 3 located on Soap Creek, sec. 21, T. 70 N., R. 15 W., Marion Township, Iowa, be implemented as a Federal project. The bridge will be protected from damages which would jeopardize the integrity of the structure and cause its failure. The plan involves placing riprap around both abutments, extending the riprap slightly beyond the sides of each abutment, and providing additional upper end and toe protection. The project area consists of a total of 200 linear feet of bankline protection, with an estimated placement of 1,800 tons of riprap at both of the bridge abutments and wingwalls. The proposed project is economically feasible with a benefit-to-cost ratio of 3.3. The total cost to the United States for construction is estimated at \$37,500.



John R. Brown
Colonel, U.S. Army
District Engineer

FINDING OF NO SIGNIFICANT IMPACT

SECTION 14 EMERGENCY STREAMBANK PROTECTION
SOAP CREEK, COUNTY BRIDGE SITE NO. 3
DAVIS COUNTY, IOWA


In accordance with the National Environmental Policy Act, the Rock Island District, U.S. Army Corps of Engineers, has assessed the environmental impacts of the above project. The intent of this project is to provide emergency bank protection around the bridge abutments and wingwalls of the bridge that crosses Soap Creek, in sec. 21, T. 70 N., R. 15 W., Marion Township, Davis County, Iowa. The project involves placing approximately 1,800 tons of riprap on about 200 linear feet of bankline and around the wingwalls of both abutments.

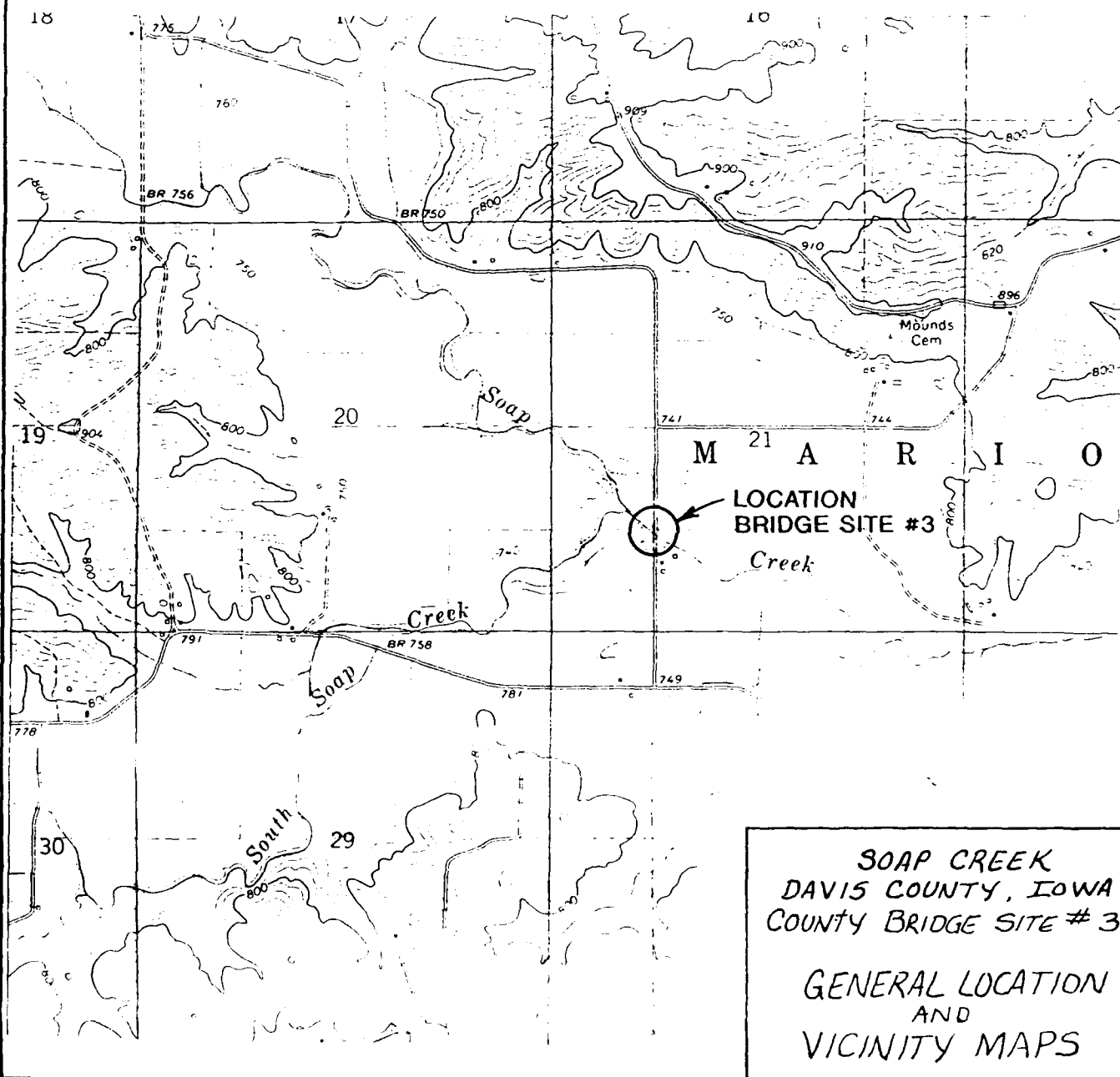
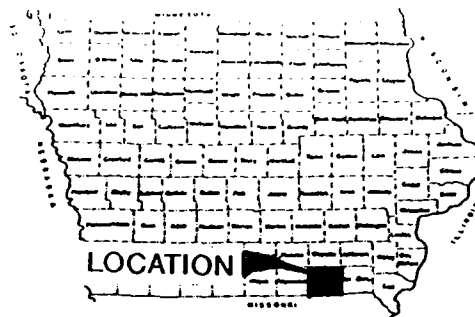
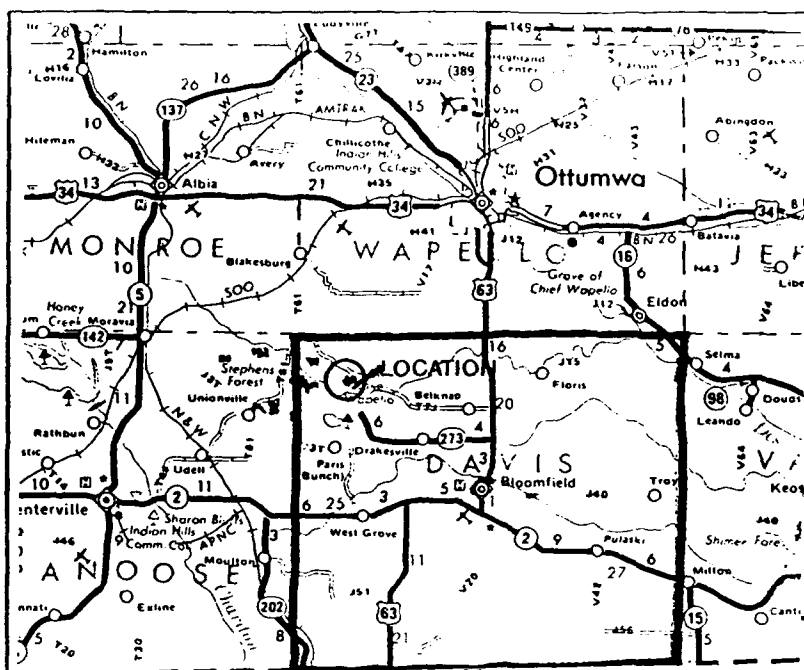
This Finding of No Significant Impact is based on the following factors:

- a. The project would have only minor and short-term impacts on fish and wildlife resources and on water quality.
- b. The proposed project would protect both bridge abutments from further damages due to the eroding bankline and scouring at the back wall of the bridge support.
- c. No significant social, economic, environmental, or cultural impacts are anticipated as a result of the proposed action.

The environmental review process indicates that the proposed action does not constitute a major Federal action significantly affecting the environment. Therefore, preparation of an Environmental Impact Statement is not required. This determination may be reevaluated if warranted by later developments.

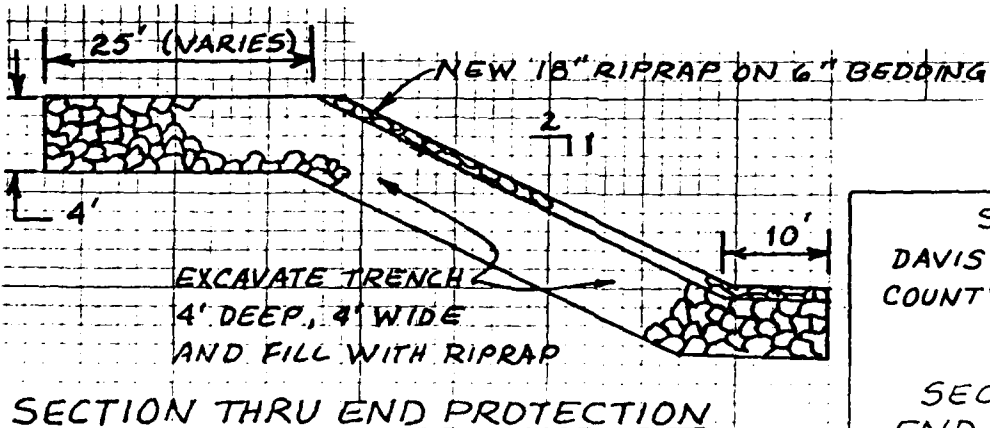
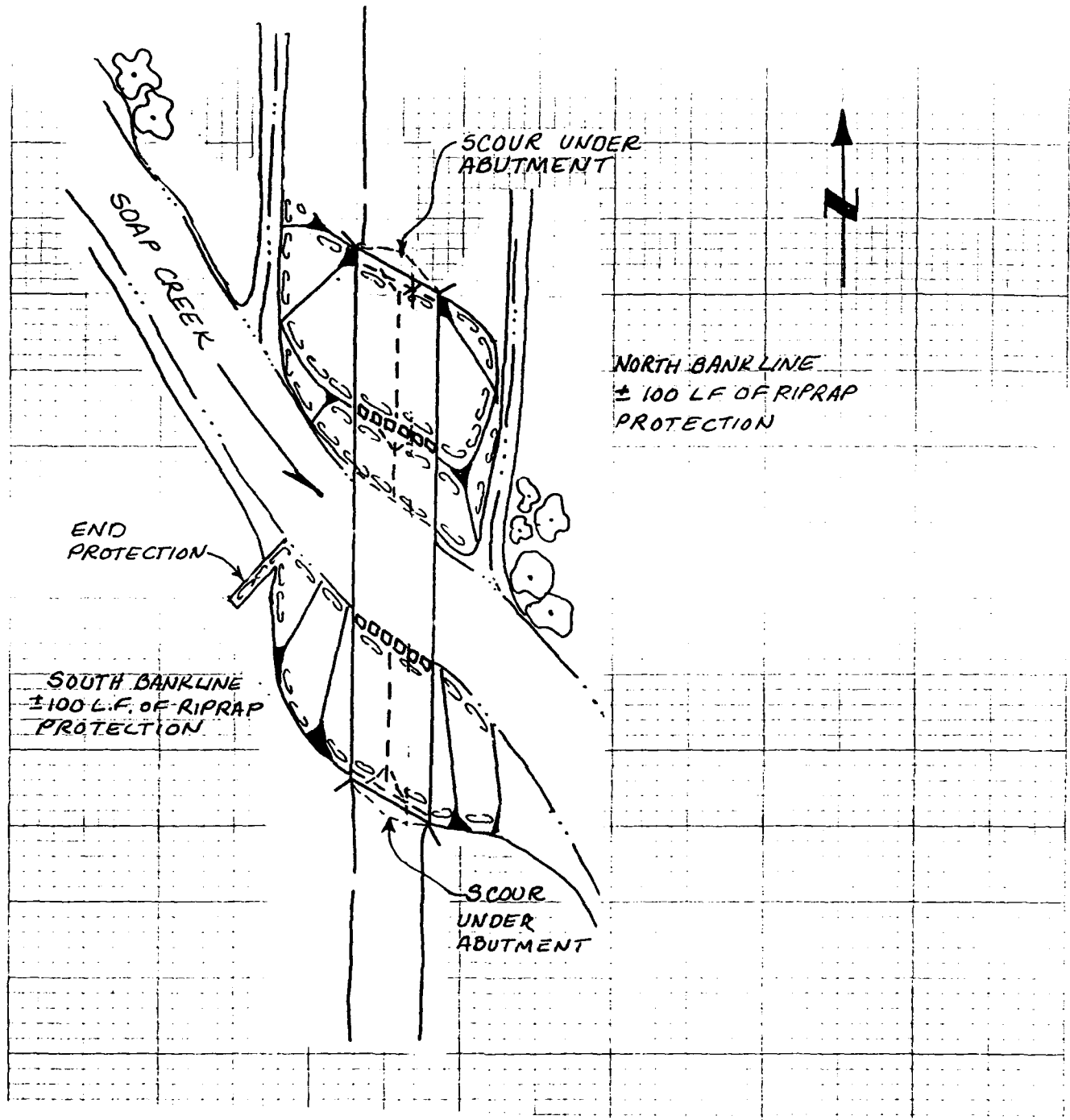
17 December 1990
(date)


John R. Brown
Colonel, U.S. Army
District Engineer



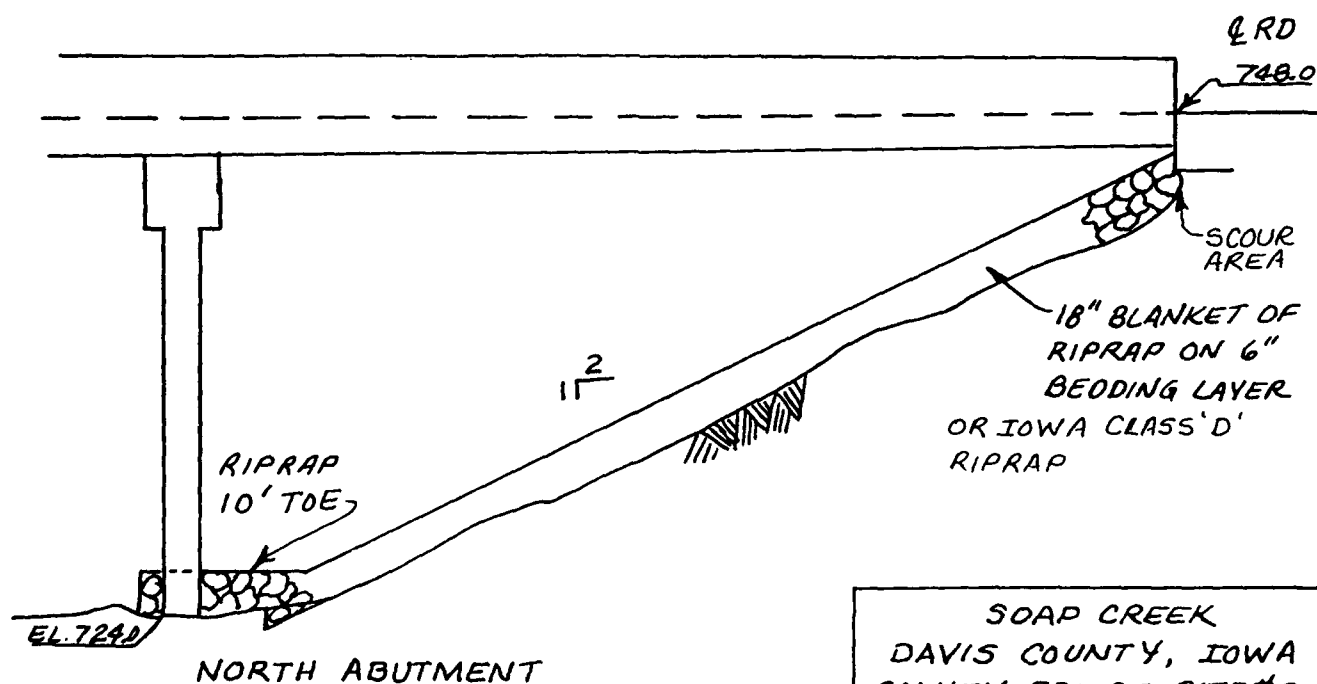
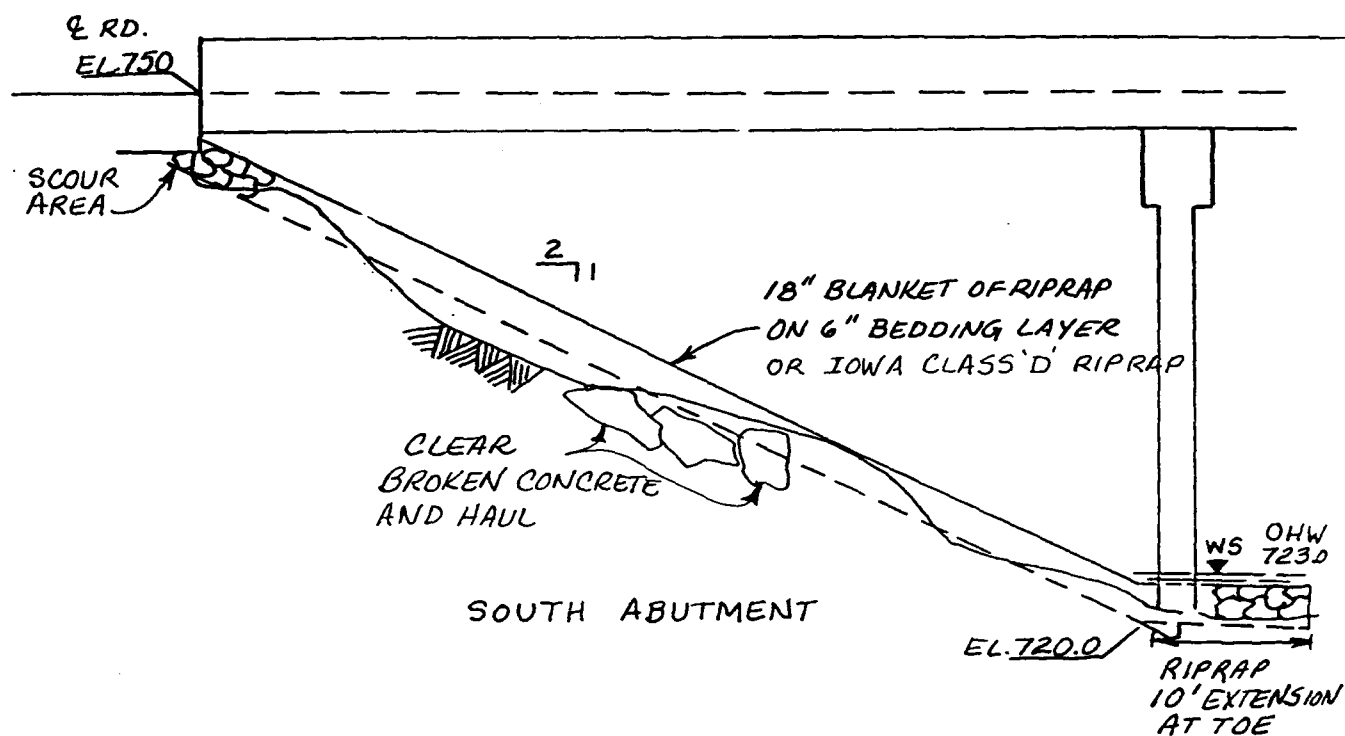
SOAP CREEK
DAVIS COUNTY, IOWA
COUNTY BRIDGE SITE # 3

GENERAL LOCATION
AND
VICINITY MAPS



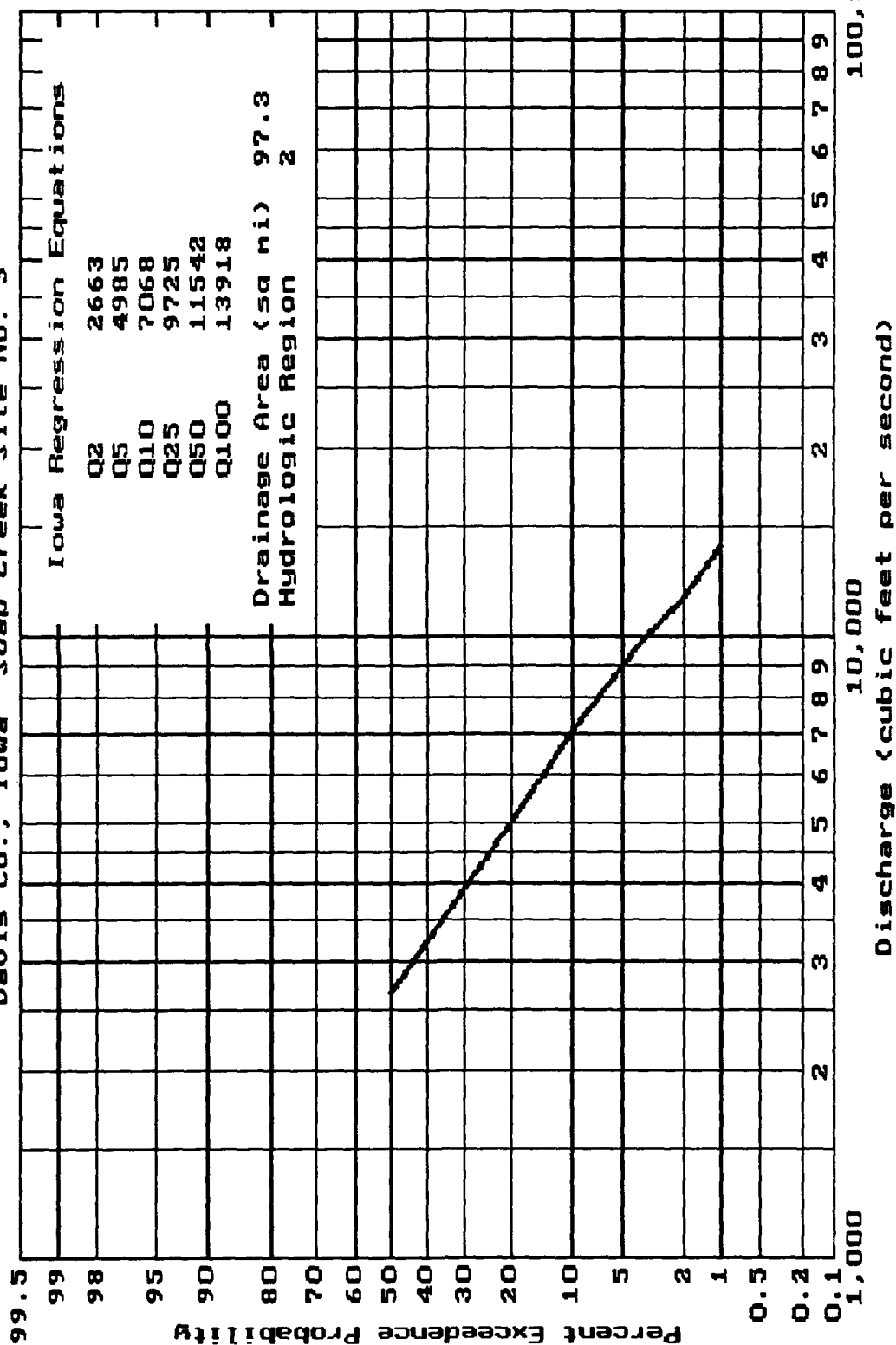
SOAP CREEK
DAVIS COUNTY, IOWA
COUNTY BRIDGE SITE #3

PLAN,
SECTION, AND
END PROTECTION



SOAP CREEK
DAVIS COUNTY, IOWA
COUNTY BRIDGE SITE #3
CROSS SECTIONS AT
BRIDGE ABUTMENTS

Davis Co., Iowa Soap Creek Site No. 3



PERTINENT CORRESPONDENCE

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State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

April 2, 1990

In reply refer to:
RC# 900326012

Mr. Dudley M. Hanson, P.E.
Chief, Planning Division
Rock Island District Corps of Engineers
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

RE: COE - DAVIS COUNTY - EMERGENCY STREAMBANK PROTECTION - FOUR
BRIDGES: SEC. 21, T70N-R15W; SEC. 27, T69N-R15W; SEC. 24,
T69N-R14W; AND SEC. 27, T69N-R13W

Dear Mr. Hanson:

Based on the information you provided, we find that there are no historic properties which might be affected by the proposed undertaking. Therefore, we recommend project approval.

However, if the proposed project work uncovers an item or items which might be of archeological, historical or architectural interest, or if important new archeological, historical or architectural data come to light in the project area, you should make reasonable efforts to avoid or minimize harm to the property until the significance of the discovery can be determined.

Should you have any questions or if the office can be of further assistance to you, please contact the Review & Compliance program at 515-281-8743.

Sincerely,

Kay Simpson
Archeologist, Review and Compliance Program
Bureau of Historic Preservation

/mtm

☐ 402 Iowa Avenue
Iowa City, Iowa 52240
(319) 335-3916

☐ Capitol Complex
Des Moines, Iowa 50319
(515) 281-5111

☐ Montauk
Box 372
Clermont, Iowa 52135
(319) 423-7173

CONVERSATION RECORD	:TIME	:DATE
	:0855	: 19 March 1990

TYPE	() VISIT () CONFERENCE (x) TELEPHONE	: ROUTING
	() INCOMING	:-----
	(x) OUTGOING	:NAME :INT

NAME CONTACTED	:ORGANIZATION	:TELEPHONE
	:	:
Darryl Hayes	:IA DNR	:(515)281-8675

SUBJECT:		
Davis County, Iowa, Section 14 Projects,		
Environmental Coordination		

SUMMARY:

I called Mr. Hayes to discuss the above projects with regard to fish and wildlife coordination.

I described the locations and proposed actions of the projects (riprapping with clean fill specific sections of shoreline near or under four bridges that cross Soap Creek and Fox River.)

Mr. Hayes indicated his agency would have no objections to the projects as described.

ACTION REQUIRED

NAME OF PERSON	:SIGNATURE	:DATE
DOCUMENTING CONVERSATION:		
Joseph W. Jordan	: <i>Joseph W. Jordan</i>	: 19 March 1990

ACTION TAKEN

Documentation to be used in evaluating projects for issuance of Section 14 permits.

SIGNATURE	:TITLE	:DATE
<i>Joseph W. Jordan</i>	:Gen. Biologist	:19 March 1990
50271-101	CONVERSATION RECORD	(12-76)

		:TIME	:DATE
CONVERSATION RECORD		: 0835	: 19 March 1990
		:	:
TYPE	() VISIT () CONFERENCE (x) TELEPHONE	:	ROUTING
	() INCOMING	:	-----
	(x) OUTGOING	:	NAME : INT
		:	-----
NAME CONTACTED	:ORGANIZATION :TELEPHONE	:	:
	:USFWS :	:	:
Chuck Davis	:Rock Island : (309) 793-5800	:	:
-----		:	:
SUBJECT:		:	:
Davis County, Iowa, Section 14 Projects,		:	:
Environmental Coordination		:	:
-----		:	:

SUMMARY:

I called Mr. Davis to discuss the above subject with regard to environmental impacts and coordination under the Endangered Species Act and Fish and Wildlife Coordination Act.

I described the location and proposed actions of the projects (riprapping with clean fill specific sections of shoreline near or under four bridges that cross Soap Creek and Fox River.)

Mr. Davis indicated his agency would have no objections to the projects as described.

ACTION REQUIRED

NAME OF PERSON	:SIGNATURE	:DATE
DOCUMENTING CONVERSATION:		:
Joseph W. Jordan	: <i>Joseph W. Jordan</i>	:19 March 1990
=====		

ACTION TAKEN

Documentation to be used in evaluating projects for issuance of Section 14 permits.

SIGNATURE	:TITLE	:DATE
<i>Joseph W. Jordan</i>	:Gen. Biologist	: 19 March 1990

50271-101	CONVERSATION RECORD	(12-76)

		:TIME	:DATE
CONVERSATION RECORD		: 1330	: 20 March 1990

TYPE	() VISIT () CONFERENCE (x) TELEPHONE	:	ROUTING
	() INCOMING	:	-----
	(x) OUTGOING	:	NAME : INT

NAME CONTACTED	: ORGANIZATION	: TELEPHONE	:
	:	:	:
Mike Bronowski	: EPA Region 7	: (913) 551-7042	:

SUBJECT:		:	:
Davis County, Iowa, Section 14 Projects,		:	:
Environmental Coordination		:	:

SUMMARY:

I called Mr. Bronowski to discuss the above subject with regard to environmental impacts and coordination under NEPA and Clean Air Act.

I described the locations and proposed actions of the projects (riprapping with clean fill specific sections of shoreline near or under four bridges that cross the Fox River or Soap Creek.)

Mr. Bronowski indicated his agency would have no objections to the projects as described.

ACTION REQUIRED

NAME OF PERSON	: SIGNATURE	: DATE
DOCUMENTING CONVERSATION:	<i>Joseph W. Jordan</i>	:
Joseph W. Jordan	:	: 20 March 1990

ACTION TAKEN

Documentation to be used in evaluating projects for issuance of Section 14 permits.

SIGNATURE	: TITLE	: DATE
<i>Joseph W. Jordan</i>	: Gen. Biologist	: 20 March 1990
50271-101	: CONVERSATION RECORD	: (12-76)

OFFICE OF
COUNTY HIGHWAY ENGINEER
DAVIS COUNTY
BLOOMFIELD, IOWA 52537

SEPTEMBER 20, 1990

LETTER OF ASSURANCE

Colonel John R. Brown
District Engineer
U.S. Army Engineer District,
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

Davis County, Iowa has reviewed the draft of the proposed Local Cooperation Agreement covering streambank erosion control on the Soap Creek at bridge site (FHWA 135881) (#3). The Agreement includes the following obligations to be carried out by Davis County.

- a. Provide, without cost to the Government, during the period of construction, all lands, easements, rights-of-way, and dredged material disposal areas, and perform all relocations and alteration of buildings, utilities, highways, railroads, bridges (except railroad bridges), sewers, and related and special facilities determined by the Government to be necessary for construction of the project.
- b. Make a cash payment of not less than 5 percent of total project costs during the period of construction, regardless of the value of the items in a. above. If the value of the items in a. above is less than 20 percent of total project costs, Davis County shall, during the period of construction, make such additional cash payments as are necessary to bring its total contribution in cash and value of lands, easements, rights-of-way, and utility and facility alterations and relocations, to an amount equal to 25 percent of total project costs.
- c. Pay all project costs in excess of the Federal statutory limitation of \$500,000.
- d. Hold and save the Government free from all damages arising from the construction, operation, and maintenance of the project, except for damages due to the fault or negligence of the Government or its contractors.
- e. Operate, maintain, replace, and rehabilitate the project or functional element thereof upon completion in accordance with regulations or directions prescribed by the Government.
- f. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for

construction and subsequent operation and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

g. Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Non-Discrimination on Basis of Handicap and Programs and Activities Assisted or Conducted by the Department of the Army."

h. Participate in and comply with applicable Federal flood plain management and flood insurance programs.

i. Prior to construction, and in accordance with the provisions of Section 221 of Public Law 91-611, Davis County will enter into a contract with the Government whereby Davis County will grant the Government a right to enter, at reasonable times and in a reasonable manner, upon land which Davis County owns or controls for access to the project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, repairing, maintaining, replacing or rehabilitating the project. If an inspection shows that Davis County for any reason of failing to fulfill its obligations under the Agreement without receiving prior written approval from the Government, the Government will send a written notice to Davis County. If Davis County persists in such failure for 30 calendar days after receipt of notice, then the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands Davis County owns or controls for access to the project for the purpose of completing, operating, repairing, maintaining, replacing, or rehabilitating the project. No completion, operation, repair, maintenance, replacement, or rehabilitation by the Government shall operate to relieve Davis County of responsibility to meet its obligations as set forth in the Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to the Agreement.

Davis County is willing and able to pay its share of the total project costs. Sufficient funds are available within the Secondary Road Fund and the cash payment can be deposited directly with the Government upon demand by the Government.

This is to advise that if the Definite Project Report for this project is approved substantially in its present form as reviewed by Davis County and as submitted for approval by the Corps of Engineers' higher authority, Davis County is willing, and legally and financially able, to sign the referenced Local Cooperation Agreement which includes the obligations set forth above.

Sincerely,



Mike McClain, P.E.
County Engineer



United States Department of the Interior



OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL AFFAIRS
230 S. DEARBORN, SUITE 3422
CHICAGO, ILLINOIS 60604

ER90/981

December 3, 1990

Colonel John R. Brown
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

The Department of the Interior (Department) has reviewed the Detailed Project Report and Environmental Assessment, Section 14 Emergency Streambank Protection, Soap Creek, County Bridge Site No. 3, Davis County, Iowa, and offers the following comments.

Mineral Resources

The Environmental Assessment does not mention mineral resources. Our records, however, indicate that sand and gravel, and stone (crushed) have been produced in Davis County, and subsurface geological formations could contain coal and gypsum deposits. Owing to the nature of the proposed work, however, we believe that mineral resources would not be significantly affected. We suggest a statement to that effect be included in subsequent versions of this document or other documents pertaining to this proposed project.

Thank you for the opportunity to comment on this document.

Sincerely,

for Joseph B. Huff
Sheila Minor Huff
Regional Environmental Office



State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

December 14, 1990

In reply refer to:
RC# 900326012

Colonel John Brown
U.S. Army District Engineer
Rock Island District Corps of Engineers
Clock Tower Building, P. O. Box 2004
Rock Island, IL 61204-2004

RE: COE - DAVIS COUNTY - EMERGENCY STREAM BANK PROTECTION IN
SEC. 21, T70N-R15W, SOAP CREEK, BRIDGE NO. 3 - DETAILED
PROJECT REPORT AND ENVIRONMENTAL ASSESSMENT

Dear Mr. Brown:

We have received your environmental review of the above
referenced document and concur with your Finding of No
Significant Impact. No historic properties will be affected and
we recommend project approval.

Should you have any questions or if the office can be of further
assistance to you, please contact the Review & Compliance program
at 515-281-8743.

Sincerely,

Kathy Gourley
Archeologist, Review and Compliance Program
Bureau of Historic Preservation

/mtm

A-8

☐ 402 Iowa Avenue
Iowa City, Iowa 52240
(319) 335-3916

☐ Capitol Complex
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☐ Montauk
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Clermont, Iowa 52135
(319) 423-7173

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 AND ENVIRONMENTAL ASSESSMENT
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 135 SENATE HART OFFICE BLDG, WASHINGTON DC 20510

HONORABLE TOM HARKIN, UNITED STATES SENATOR
 316 HART OFFICE BLDG, WASHINGTON DC 20510

HONORABLE CHARLES E. GRASSLEY, UNITED STATES SENATOR
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 CEDAR RAPIDS, IA 52401

HONORABLE CHARLES E. GRASSLEY, UNITED STATES SENATOR
 721 FEDERAL BUILDING, 210 WALNUT STREET
 DES MOINES, IA 50309

HONORABLE TOM HARKIN, UNITED STATES SENATOR
 733 FEDERAL BUILDING, 210 WALNUT STREET
 DES MOINES IA 50309

HONORABLE TOM HARKIN, UNITED STATES SENATOR
 PO BOX 74884, CEDAR RAPIDS IA 52402

HONORABLE JIM LEACH, HOUSE OF REPRESENTATIVES
 1514 LONGWORTH HOUSE OFFICE BLDG, WASHINGTON DC 20515

HONORABLE JIM LEACH, REPRESENTATIVE IN CONGRESS
 PARKVIEW PLAZA, ROOM 204, 107 EAST 2ND STREET
 OTTUMWA IA 52501

DIRECTOR, ADVISORY COUNCIL ON HISTORIC PRESERV
 OLD PO BLDG #809, 1100 PENNSYLVANIA AVENUE NW
 WASHINGTON DC 20004

DIRECTOR-OFC OF ECOLOGY & COMM, DEPARTMENT OF COMMERCE
 ROOM 5813 (PP/EC), 14TH & CONSTITUTION AVENUE NW
 WASHINGTON DC 20230

DIRECTOR, OFFICE OF ENVIRONMENTAL COMPLIANCE
 DEPT OF ENERGY - ROOM 4G064, 1000 INDEPENDENCE AVE SW
 WASHINGTON DC 20585

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DR ALLAN HIRSCH - DIRECTOR, OFFICE OF FEDERAL ACTIVITIES (A-104)
US ENVIRONMENTAL PROTECTION AGENCY, 401 M STREET SW
WASHINGTON DC 20460

OFFICE OF ENVIRONMENTAL PROJ REVIEW, DEPARTMENT OF INTERIOR 18
MS 4239-MIB, 18TH & C STREETS NW
WASHINGTON DC 20240

DR DAVID CLAPP, OFFICE OF THE DIRECTOR
CNTR FOR ENV HEALTH&INJ CONTROL/F 2, CENTERS FOR DISEASE CONTROL
ATLANTA GA 30333

MR RICHARD NELSON - FIELD SUPVR, U.S.FISH & WILDLIFE SERVICE
1830 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

DIVISION ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION
PO BOX 627, 6TH AND KELLOGG STREET
AMES IA 50010

STATE CONSERVATIONIST, SOIL CONSERVATION SERVICE USDA 2
693 FEDERAL BLDG, 210 WALNUT STREET
DES MOINES IA 50309

GEOLOGICAL SURVEY BUREAU, ENERGY AND GEOLOGICAL RESOURCES DIVN
IOWA DEPT OF NATURAL RESOURCES, 123 NORTH CAPITOL STREET
IOWA CITY IA 52240

WATER RES. RESEARCH CENTER, ATTN DR AL AUSTIN
355 TOWN ENGINEERING BUILDING, IOWA STATE UNIVERSITY
AMES IA 50010

MR MORRIS KAY, ADMINISTRATOR 3
US ENVIRON PROT AGENCY-REG VII, 726 MINNESOTA AVE
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